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SERIAL NUMBER	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
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08/474,450 06/07/95 SHUBER

DARBY AND DARBY
805 THIRD AVENUE
NEW YORK NY 10022

18M2/1009

A 0372/08128
EXAMINER

TUNG, J. Tung

ART UNIT PAPER NUMBER

1807

#6

1807

DATE MAILED:

10/09/96

This is a communication from the examiner in charge of your application.
COMMISSIONER OF PATENTS AND TRADEMARKS

☒ This application has been examined ☐ Responsive to communication filed on _____ ☐ This action is made final.

A shortened statutory period for response to this action is set to expire 3 month(s), 1 days from the date of this letter.
Failure to respond within the period for response will cause the application to become abandoned. 35 U.S.C. 133

Part I THE FOLLOWING ATTACHMENT(S) ARE PART OF THIS ACTION:

- | | |
|---|---|
| 1. <input checked="" type="checkbox"/> Notice of References Cited by Examiner, PTO-892. | 2. <input type="checkbox"/> Notice of Draftsman's Patent Drawing Review, PTO-948. |
| 3. <input checked="" type="checkbox"/> Notice of Art Cited by Applicant, PTO-1449. | 4. <input type="checkbox"/> Notice of Informal Patent Application, PTO-152. |
| 5. <input type="checkbox"/> Information on How to Effect Drawing Changes, PTO-1474. | 6. <input type="checkbox"/> _____ |

Part II SUMMARY OF ACTION

1. ☒ Claims 1-12 are pending in the application.
Of the above, claims _____ are withdrawn from consideration.
2. ☒ Claims 1-12 have been cancelled.
3. ☐ Claims _____ are allowed.
4. ☒ Claims 1-12 are rejected.
5. ☐ Claims _____ are objected to.
6. ☐ Claims _____ are subject to restriction or election requirement.
7. ☐ This application has been filed with informal drawings under 37 C.F.R. 1.85 which are acceptable for examination purposes.
8. ☐ Formal drawings are required in response to this Office action.
9. ☐ The corrected or substitute drawings have been received on _____. Under 37 C.F.R. 1.84 these drawings are ☐ acceptable; ☐ not acceptable (see explanation or Notice of Draftsman's Patent Drawing Review, PTO-948).
10. ☐ The proposed additional or substitute sheet(s) of drawings, filed on _____, has (have) been ☐ approved by the examiner; ☐ disapproved by the examiner (see explanation).
11. ☐ The proposed drawing correction, filed _____, has been ☐ approved; ☐ disapproved (see explanation).
12. ☐ Acknowledgement is made of the claim for priority under 35 U.S.C. 119. The certified copy has ☐ been received ☐ not been received ☐ been filed in parent application, serial no. _____; filed on _____.
13. ☐ Since this application appears to be in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under Ex parte Quayle, 1935 C.D. 11; 453 O.G. 213.
14. ☐ Other

EXAMINER'S ACTION

Part III DETAILED ACTION

Oath/Declaration

The declaraton is informal in that an error apppears in "...which I am aware which is material to the examination of this application in accordance with 37 CFR 1.56(b)". It would appear that "1.56(b)" should be -- 1.56(a)--. A formal declaration is required.

Specification

1. The disclosure is objected to because of the following informalities: The SEQ ID NO on page 4, line 5 is supposed to be SEQ ID NO 64. Appropriate correction is required.

Claim Objections

2. Claims 2, 5-7 and 10 are objected to because of the following informalities: "SEQ ID NO" has to be recited next to the nucleic acid sequence in the claims. Appropriate correction is required.

Claim Rejections - 35 USC § 112

3. Claims 4 and 12 are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

a. Claim 4 is confusing because the limitation wherein the melting temperature of a hybrid is at least 72⁰C in 0.5M NaCl is not recited in the Specification. It is suggested that this language be inserted into the specification by amendment.

b. Claim 12 is confusing because claim 12 does not further limit claim 9.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. § 103 which forms the basis for all obviousness rejections set forth in this Office action:

A patent may not be obtained though the invention is not identically disclosed or described as set forth in section

102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Subject matter developed by another person, which qualifies as prior art only under subsection (f) or (g) of section 102 of this title, shall not preclude patentability under this section where the subject matter and the claimed invention were, at the time the invention was made, owned by the same person or subject to an obligation of assignment to the same person.

5. Claims 1-5 are rejected under 35 U.S.C. § 103 as being unpatentable over Weighardt et al. (PCR Methods and Applications 1993, Vol. 3, pg. 77-80).

Claims 1-5 are drawn to a single-stranded oligonucleotide primer comprising X and Y sequence. Both sequences have 17-20 bases. X sequence is at 5' end of the primer which does not hybridize to the target nucleic acid and its melting point is greater than 60°C in the absence of the other sequence. Y sequence contains a target sequence or its complement and is located after X sequence at 3' end of the primer. In claim 4, the melting point of the hybrid is at least 72°C in a solution of 0.5M NaCl.

Weighardt et al. disclose a PCR method in which tailed primers are used. The primer has two parts. One part is at 5' end with an unrelated sequence of about 10-15 bases. Another part containing 17-20 bases is located after the first part and complementary to the recognition sites of the template. The

entire primer has T_m which is equal or greater than 72°C (see pg.77).

One having ordinary skill in the art at the time the invention was made would have been motivated to make a primer comprising 17 mer because this is suggested by Weighardt. The primer of this reference has a high stringency binding site. The melting point is suggestive of "greater than about 60°C " as in claim 1. Even though Weighardt does not specifically teach SEQ ID NO: 64 in his reference, Weighardt gives a broad teaching of any possible sequence providing a high stringency binding site. SEQ ID NO: 64 is one of the large number of sequences expected to work in the primer. It would have been prima facie obvious to one of the ordinary skills in the art at the time of the invention to make the primer as claimed.

6. Claims 6-12 are rejected under 35 U.S.C. § 103 as being unpatentable over Picci et al. (Hum. Genet. 1992 Vol. 88, pg. 552-556) in view of Weighardt et al. (PCR Methods and Applications 1993, Vol. 3, pg. 77-80).

Claim 6 is drawn to a method to amplify multiple target DNAs in which the claimed primer is used and the steps of melting, reannealing and DNA synthesis are performed.

Claims 7-9 are drawn to a method to detect multiple defined target DNAs. A pair of primers as claimed in claims 1-5 is used in the method. Then a sample containing DNA contacts the primer.

PCR amplification is performed and the products are detected on gel electrophoresis.

Claims 10-12 are drawn to a method to detect a target DNA from multiple individuals. The procedure is same as in claims 7-9.

Picci et al. disclose a multiplex polymerase chain reaction to simultaneously screen seven mutations. Several pairs of oligonucleotide primers are used in the reaction. The results are shown on the vertical polyacrylamide gel electrophoresis (see pg. 552, Summary).

Picci et al. do not disclose a chimeric primer used in the reaction comprising two portions wherein one portion is not complementary to a target sequence, another portion is complementary to the target sequence. Each portion comprises from 17-20 bases.

Weighardt et al. disclose a PCR procedure which uses a pair of primers. The primer has two parts. One part is at 5' end with an unrelated sequence of about 10-15 bases. Another part containing 17-20 bases is located after the first part and complementary to the recognition sites of the template. The entire primer has T_m which is equal or greater than 72°C (see pg.77). The procedure includes two steps amplification (see pg. 77). The amplification products are detected by gel electrophoresis.

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One having ordinary skill in the art at the time the invention was made would have been motivated to modify the primers in the method of Picci et al to contain a 5' sequence providing a high stringency binding site because Weighardt teaches the primers used in his reaction have unique high-stringency binding sites in the PCR cycle. The claimed sequence is one of the equivalents which would have been expected to work in the method. It would have been prima facie obvious to carry out the claimed methods.

7. No claims are allowable over the prior art.
8. Any inquiries concerning this communication or earlier communications from the examiner should be directed to Joyce Tung whose telephone number is (703) 305-7112. The examiner can normally be reached on Monday-Friday from 8:30 AM-5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, W. Gary Jones, can be reached at (703) 308-1152. The fax number for Art Unit 1807 is (703)305-7401.

Any inquiries of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 308-0196.

9. Papers related to this application may be submitted to Group 1800 by facsimile transmission. Papers should be faxed to Group 1800 via the PTO Fax Center located in Crystal Mall 1. The faxing


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of such papers must conform with the notice published in the
Official Gazette, 1096 OG 30 (November 15, 1989).

Joyce Tung

September 26, 1996


W. GARY JONES
SUPERVISORY PATENT EXAMINER
GROUP 1800
10/1/96